

# WHITE PAPER ON RISK ASSESSMENT AND RISK PLANNING

#### Foreword

The Institute of Strategic Risk Management was launched on 10th March 2019, with the objective to 'create a global centre where practitioners, academics and policy makers can come together to share information, help progress and promote the underlying understanding and capabilities associated with strategic risk and crisis management, and develop their own personal and professional networks'.

In October 2019 we held our first conference, 'Crisis 2030', in partnership with the Geneva Centre for Security Policy, who hosted the event at their headquarters in Geneva, and which attracted senior personnel from many of the government, corporate and global NGOs situated in that city. We took as our leitmotif something that Klaus Schwab, Executive Chairman of the World Economic Forum, wrote in the foreword to that year's WEF Global Risk Report. 'Our world currently stands on the brink of a mass political, technological and social shift which will transform our existence in ways we cannot yet possibly know'.

Even then, before the idea of a global pandemic had become reality, it was clear that the basic frameworks of strategic risk management that had been developed over the previous fifty years were beginning to crumble in the face of the increasingly complex and unbounded high impact events that the world was facing. If the defining word of the decade following 9/11 was 'crisis', and the defining word of the first half of the next decade was 'resilience', then it became increasingly clear that as we approached 2020, the defining word for the risk environment we were entering into was 'unprecedented'. Global warming, adverse weather events, infrastructural failures, IT dependency, supply-chain vulnerabilities, resource depletion were all causing both immediate impacts and cascading consequences that our standard risk management frameworks were no longer able to describe, much less engage with.

One of the messages that emerged from the Crisis 2030 conference was that the threats and challenges that we were facing were not some theoretical construct that we would need to engage with as part of a future scenario, but were actually part of the reality that we were already living in.

And then Covid-19 hit. And it became immediately clear to anyone who had any understanding of strategic risk and crisis management, whether at a national, regional or global level, that the frameworks that we thought we had in place for exactly those sort of high impact events were not only not delivering the services we would expect from them, but were actually completely unfit for the purposes for which they had been designed.

The first thing to say about Covid-19 is that it was not a 'Black Swan' event. It was not a paradigm-shifting realisation that redefined what we understood as pandemic management. Emergent infectious diseases had appeared on the UK's National Risk Register in 2017, with a likelihood rating of 4/5 over the next five years - the same rating as pandemic influenza, which is an almost annual event. We had also seen nascent global pandemics on a regular basis since the early 2000's - SARS, MERS, Swine Flu, Avian Flu, Zika and Ebola had all been recognised as having the potential to move from local events to global impact. And yet when the news first started coming out of Wuhan, China in late 2019 that there was something very bad happening there, that message did not have the impact that it should have done on the government agencies around the world who were specifically tasked with preparing their countries for high impact crisis events.

It is significant, both within the context of Covid-19 and also within the context of preparing for future potentially catastrophic crises, that it was in fact the countries of south-east Asia, which had lived through SARS in 2003, who were sensitive to the potential significance of the news from Wuhan. It was those countries - Taiwan, Hong Kong, Singapore and South Korea - who were able to acknowledge that significance, to model the potential issues associated with it and were able to develop a national response management framework that would support the information gathering, sense-making and decisionmaking that underpins any crisis management operation. The single most significant fat that allowed those countries to recognise, prepare for and respond to Covid-19 was the fact that they had been through a similar experience before.

If there is a lesson from Covid-19 to the global strategic risk management community, it is that it is the ability to recognise patterns and to give meaning and significance to the precursor signals that provides the opportunity to recognise early, plan effectively and respond appropriately to any crisis event, whatever its specific scope or context.

If there is one thing we can be certain of, it is that in the coming years we will be entering a risk environment where unprecedented crises will become part of our normal operating reality. The events we have seen in the last few weeks alone – Houston going off-line after an 'unprecedented' snow storm, global supply chains being hit by the unprecedented closure of the Suez Canal, a cyber-attack on a Florida water supply facility, the increasing use of ransomware attacks to close down both critical national infrastructures and multinational corporate organisations, the loss of global internet platforms and the increasing vulnerability of satellite-based communications systems – are clear indications that rather than being resilient, our global systems are both fragile and brittle.

The House of Lords Select Committee on Risk Assessment and Risk Planning set itself the task of asking the questions as to how the UK could best prepare itself to be as resilient to extreme risks and emergencies as possible. This is of course a question that cannot be examined in isolation. To a large extent, the question is not 'What is it that we need to do?', but rather 'What sort of country do we think that we need to become?'. If the question set by the inquiry is to have any meaning, it must be see in in terms of national transformation – something that requires support and participation on a 'whole of society' basis. In this sense, it is the role of government to become a facilitating agency, engaging and empowering local communities, existing organisations and collaborative frameworks to allow multiple stakeholders to both have ownership of and contribute to local responses on a national basis.

The questions asked by the inquiry are fundamental to our ability to develop frameworks and capabilities that will stand us in good stead for future crises - whatever they might be. To a large extent the challenges that we are facing can be classified as 'Wicked Problems ' - problems for which not only are there no clear solutions, but which by their very nature go beyond our capability to formulate and manage them. The concept of Wicked Problems was first outlined by American urban planners Horst Rittel and Melvin Webber in a1973 academic paper. They outlined ten principles of wicked problems. The first nine are technical, but the tenth was simply: 'The planner has no right to be wrong'. Given the potential catastrophic consequences of a failure to understand and prepare for future crises, that is perhaps even truer today than it was fifty years ago.

This White Paper is an edited version of the written submission made to the House of Lords inquiry by the ISRM. We believe that the lessons outlined here are applicable to strategic planning and crisis management in any situation, whatever the specific details might be, and whether that is a government, city, critical national infrastructure, corporate or community context.

The crises we will be facing in the coming decade will undoubtedly test us to an extent that we have not experienced previously. National and global responses to Covid-19 have clearly identified weaknesses in our crisis management modelling, frameworks and capabilities. It is hoped that this has been a wake-up call to all of us involved in the strategic risk management field.



**David Rubens** Executive Director

20<sup>th</sup> June, 2021

## **About The ISRM**

The Institute of Strategic Risk Management was established in October 2018 in order to provide a global platform where practitioners, academics and policy makers can come together to share information and discuss issues relating to the major systemic risks facing the world today. It has a Global Advisory Council consisting of 36 leading figures from government, commerce and academia, led by the ISRM President Lord Toby Harris, a long-term government advisor on all aspects of national security, risk and crisis management and currently Chair of the UK National Preparedness Commission. The ISRM has 23 International Chapters across US, Middle East, South-East Asia, Eastern and Western Europe and Australia, and is part of a global network of academic institutions and think-tanks focussing on the social and policy issues associated with Covid-19. It has run a series of Covid-19-related events since the start of the pandemic, including a virtual global conference in July 2020, and an on-going bi-weekly on-line Coronavirus Campfire programme, that has created a realtime longitudinal record of the impacts of the pandemic and government policies on activities and attitudes across the world.



100+ Campfire Programme





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Dr Rubens wrote his doctorate thesis on strategic management and critical decision-making in hyper-complex crisis environments. He was an SME in a national Black Sky / Black Start review programme and is currently a member of the UK National Preparedness Commission led by Lord Toby Harris.



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Mark is an independent consultant working specifically on the management of risk, business continuity management, resilience and international security sector reform. His experience is based on 30 years operational service in the British Army and he specialises in analytical evaluation of situations to deliver incisive decision making, effective study of the lessons identified process to enhance capability and management processes as well as the organisation and delivery of concise training programmes to grow expertise.



# Introduction

The world's increasingly interconnected globalised economy has facilitated an increasingly systemic nature of disaster risk. The future risk landscape is becoming more complex, uncertain and cascading, making traditional risk management approaches to specific risk typologies growingly ineffective. As captured in the WEF Global Risk Report 2021, five of the top six risks are now environmental, but many of them are not adequately represented on the 2020 UK Risk Register.

Considering the UK risk landscape, there are global risks with varying severity as well as domestic risks that have built up over the years, either through negligence or socio-political edevelopments.

Pandemic outbreaks of Emerging Infectious Diseases (EID) remain the most extreme risk and are linked to growing stresses on the natural environment. The Covid-19 pandemic has also further exposed and exacerbated deeply rooted regional tensions, socio-economic inequalities, and political divisions across the United Kingdom. Reflecting this fragility, there is a growing and substantial political risk that Scotland and possibly Northern Ireland could leave. Climate change will serve to increase the severity and frequency of extreme hydrometeorological hazards, such as coastal and riverine flooding. The experience from Japan's Fukushima nuclear accident has indicated that leakage of radioactive material into the atmosphere upstream of prevailing winds can lead to fallout over high-density cities. Thus, a potential incident at the Hinkley Point nuclear power station could significantly affect the Thames Valley region. Critical infrastructure is further threatened by malicious cyber attacks, as cyber threats continue to engulf all aspects of digital life. Besides the continuous digitalisation of all aspects of social and economic activity, there is also an increasing risk to severe space weather events and related failures of ICT and electricity services. Finally, the physical infrastructure that was built during a period of rapid industrialisation is becoming more and more fragile. The combination of lack of investment, under-management, and spare capacity means that assets have been been operated at or beyond operational capacity for extended periods of time, increasing the risk of major disruptions to critical services. Some of the critical energy, communications and transport infrastructure could pose additional national security issues when they are operated under the ownership of what can be considered as hostile states.

There is undoubtedly a growing necessity to come to terms with the changing risk landscape and to develop frameworks that allow a comprehensive understanding of complex risks as well as better equipping communities to engage with complex events by strengthening resilience and lessons learned.



# **Risk Identification** and Classification

In its current form, the UK risk register can serve to identify main risk typologies such as likelihood and impact. However, these identified risk typologies require further analysis to understand risk in all its dimensions of vulnerabilities, capacities and exposure of people and assets. The system in place only allows for reactive crisis management, rather than proactive strategic risk management that tailors risk response to local risk dynamics. Failure to adequately understand these local risk dynamics makes it difficult for local authorities and line ministries to take effective anticipatory actions of a more preventative nature. This has been readily apparent in the Covid-19 response in the use of national lockdowns to suppress exposure downstream, rather than targeted actions to reduce vulnerability and exposure upstream based on timely and relevant risk information.

Standard risk identification and classification procedures are a good first step to identify the main risk typologies, but the process needs to go further as these procedures do not adequately capture slow onset events such biodiversity loss or climate action failure, nor disaggregate risk data according to different exposure and vulnerability levels. Effective planning and capability development, as well as predicting actual outcomes of complex incidents can be supported by modelling secondary and subsequent consequences and help in predicting actual outcomes. An example would be the impact of loss or unavailability of key workers. Another example is the pandemic impact of increasing economic and social disparities across society which threaten social cohesion, trust and collaboration. Ultimately, this undermines societal resilience and accelerates the division of the home nations.

When dealing with complex systemic risks there is a need to shift away from traditional risk management to specific risk typologies and place greater emphasis on strengthening resilience and forecast-based anticipatory early action. First, the use of disaggregated risk information based on an understanding of differential exposures and vulnerabilities would enable effective targeted actions to high risk groups and high-risk vectors. Second, a better system-wide analysis and perspective to understand the interconnected nature of risk, critical interdependencies, and limits and thresholds would enable informed strategic risk management choices to be made as close to the point of implementation as possible. For this decentralised approach to be effective on a national scale, it would require a national framework as well as a supportive and enabling environment. Thirdly, while scenario planning can be useful to inform better preparedness and contingency planning, there is also the need for the ability to model and engage with the challenges of the complex and uncertain nature of risk. This includes political pressures and considerations that could influence crisis management decision-making. Lastly, there is a need for a more systemic risk management approach and resilience strengthening that has wider co-benefits to society beyond emergency situations.

In general, any risk identification system used would only be indicative. While there is no right or wrong, a system can be viewed as either useful or not useful and would provide a framework for discussion and engagement. However, the development of an overarching strategic doctrine is much more significant than the way that risks are mapped or measured. This doctrine would allow for a sensitivity to change, integration of multiple stakeholders, deference to expertise and the strengthening of agility, adaptability, and innovativeness.

#### **Government Structure**

When dealing with increasingly complex systemic risks, the correct question to ask is what kind of country the UK has to become rather than asking what needs to be done.

A natural place to start to think about how the country can be better equipped against these future challenges is its government structure. The current highly centralised top-down government culture is not well suited to manage extreme events on a national scale. These include, but are not limited to, events that have widespread diffuse impacts across the more vulnerable sections of the population, such as pandemic diseases, extensive radiation leakages or widespread public disorder.

There seems to be a clear tendency at the national government level for all decision-making to be highly concentrated amongst a small group of people in Whitehall, instead of having an inclusive and consultative dialogue with all stakeholders on a national level. The examples of lockdowns and other policies during the Covid-19 pandemic have been a clear example of this. Whenever decisions were imposed on hospitals, schools and other sectors or regions such as Manchester there was little if any engagement or advance warning. Furthermore, the UK emergency response appears to be highly politicised, particularly in relation to funding and implementation of an overarching management strategy. There is currently little sense of such a national crisis and emergency management framework which would allow a strong consolidation in terms of governance structure, geographical integration and multi-agency response. The absence of this framework prevents both preparation and post-event responses and hinders multiagency cooperation. This is especially true for ministry-led agencies rather than blue light agencies. Even though the UK emergency legislation, along with its strategic approach, operational response structure and multi-agency processes has been successfully established, these systems and processes have not been adequately empowered, capacitated and resourced. As exposed during the pandemic, they have been under-funded, under-utilised and consequently did not emerge at full strength when needed.



The significant issue in the response to Covid-19 in the UK was not the nature of the pandemic itself, which remains relatively benign in terms of pandemics as a class. The issue had much more to do with the described internal governance failures. Given that the current structure is highly centralized, politicized, and under-resourced, there is a need to understand strategic risk as relating to a lack of integrated capabilities, as much as to external hazards or threats. If those governance issues are not resolved, focussing on external threats and hazards would have limited impact in the case of another highimpact event.

Generally speaking, there is a need for an all-of-government resilience framework at national, regional and local levels. Any event that can be considered a major incident and requires emergency response or crisis management would be critically dependent on these structures. It is important to keep in mind that these structures should not be merely reserved for rare or anomalous events. In this case they would almost certainly be seen to be under-prepared for responding to the challenges associated with sudden, rare and unstable scenarios. To avoid this, it is critical that such capabilities are embedded into on-going organisational and multi-organisational practices, so that potential failure points can be identified and inter-agency working practices can be normalised. This approach may need a change in culture of public administration, with more attention given to building sustainable disaster risk management and resilience capacities at the intermediate and local levels. The resources already mobilised in response to Covid-19 would represent a unique opportunity to do this.







# **Resilience Development**

Resilience is an issue of pre-event preparation rather than post-event response. Its development is as much about culture and leadership as it is about specific protocols or frameworks. If there is not an understanding of or a belief in integration, information sharing, and mutual support as part of the normal operating environment, there would be little possibility of developing those characteristics in an effective manner in the middle of a high-stress crisis event. The development of resilience requires on-going, sustained planning and practise through training, exercises and validation, through which protocols and frameworks, skills and capabilities, are embedded as normal parts of operational procedures. As with all aspects of strategic capability development, these need to be approached in a structured and cohesive manner, rather than as a piecemeal and occasional exercise.

National scale disasters that impact the general population require the active engagement from all of society, with a balance of supply and demand-side actions, as well as top-down and bottom-up approaches. Different institutional and individual actors fulfil different yet complementary functions at different administrative levels. Resilient individuals, households and neighbourhoods are the foundation of any resilient society. It is important to note that there is no single magic solution that would suddenly create national resilience. Resilience itself is the outcome of multiple interactions, each of which is united in working towards a common goal. Any solution that could be developed would need to be done on a society wide, integrative and collaborative basis, acknowledging the benefits of localised empowerment and engagement, and perhaps most importantly, being sustained over generational time-periods. An increased national resilience framework developed to engage with relatively structured crisis events, would also create a framework for modelling and engaging with more long-term issues such as increased climate change and environmental degradation.

These are not quick fix solutions but require the strengthening of societal resilience across the interconnected domains of climate change, biodiversity, and sustainable development. Both the rise in emerging infectious diseases and increasing climate change are linked to environmental degradation and declining ecosystems. To prevent these threats should be a priority task when considering how the UK or the world will look like in 50-100 years' time if the resilience methodology is not developed. One of the critical characteristics of resilient organisations is that they are fast learning. Given the fact that future high-impact events are likely to have significant and potentially long-lasting impacts on society, it is the duty of everyone in any managerial or leadership role to ensure that the organisation they are responsible for has an understanding of the issues involved in crisis readiness, and the necessary capabilities to respond appropriately and effectively in the event that those capacities are tested in reality. This is no longer merely an issue of managerial competency, but a moral responsibility.

To increase cost effectiveness, investments in resilience must have cobenefits not only for disaster management but also for development. Co-benefits would be related to interconnected domains of disaster risk reduction, climate change and sustainable development. They would help to reduce future disaster losses, disruption and possible recession, and would allow for a quicker recovery. On a national level it would improve growth and prosperity and increase the competitive advantage. The methodology can include holistic approaches that have multiple co-benefits and strengthen the business case for investing in greater resilience in a world increasingly defined by extreme shocks and stresses. It is important that these co-benefits are also demonstrated. In situations of complexity and uncertainty, the cost to invest in traditional risk management measures for a one risk typology that may or may not manifest is too high.

There is also a need for a coherent communication strategy at all levels. Information in itself is often complex and fast-changing, and every post-crisis response review highlights the lack of effective communication as a critical failure point. This is true both for internal communication and information exchange on a multi-agency basis between the centre and the out-lying nodes, and between the authorities and the public. If a crisis management response to critical incidents is considered to be an issue of the integration of multiple stakeholders, then the development of an effective and sustainable communications structure and strategy is a critical component of that.

It is important then, for a variety of reasons, to use disaster events to demonstrate and support post-disaster resilient recovery, such as build back better. This includes showing resilient and sustainable development pathways to inform future investments in social-economic and governance infrastructures. This process should be approached with the attitude of aiming to leave behind a better prepared and more resilient community that will be able to better cope with future shocks and stresses of all kinds, whether foreseen or unforeseen.

A major weakness in the current approach is the lack of an integrated risk management across the disaster cycle. It is important to consider disaster preparedness response, recovery, and mitigation as interdependent activities that serve to complement and drive synergies across the disaster cycle.

Emergency response should be designed in a way to support an early recovery. It should understand, build on, and reinforce existing sub-national and local capacities. There is a need to understand emergency needs in relation to capacities in order to build a better prepared, more responsive, and more resilient community and nation. This has clearly not been the case with the UK Covid-19 response strategy, which has been fragmented and only barely mentioned recovery, which is invariably the most complicated and longest of the disaster phases.

While it is generally accepted that better preparedness improves the effectiveness of the response, it is less well understood that the way in which it is designed and implemented can have a direct bearing on the effectiveness of an early recovery. Failure to understand this can prolong the disruption and deepen the recession curve. Risk is mitigated and resilience strengthened by enhancing adsorption, adaptive and transformative capacities.

Any resilience in terms of the crisis response contexts described here should be seen more in terms of surge capacity than the creation of entirely new capabilities. Testing and exercising should be used to test capabilities which are already in place. If they are used as one-off events and are expected to be able to predict or ensure actual capability in the event that they are needed in a real-time crisis situation, the likelihood is that those capabilities would fail. It is also likely that the interventions themselves could create unexpected consequences that could become critical challenges.

# **Community Planning**

As has been laid out previously, the majority of disaster risks are better managed through decentralised local risk governance mechanisms. The central government is too remote from local risk dynamics, which is why such an integrated disaster risk management approach should be adapted. It has been identified very early on in the ISRM Coronavirus Campfire discussions that community engagement should be seen as a national resource. Given that a crisis always involves the twin attack vectors of overstressed national response frameworks and the breakdown of the underlying infrastructures that would support speedy and effective response management, community resilience should be considered as something that is fundamentally central and critical to national resilience, not a by-product or after-thought. However, the UK has relatively low levels of community resilience and local preparedness. Even though disaster management structures and doctrines are in place, they need resources to build up local disaster risk management and resilience capabilities, which historically have been underinvested.

In the light of increasingly complex, uncertain, and interconnected risk, the UK needs to shift its emphasis from traditional risk management to strengthening local level resilience and local risk governance capacity. This means a more preventative approach that has wider socio-economic and environmental cobenefits but requires system-wide perspectives and greater policy coherence across traditional policy silos. It is less about an approach to manage crisis or providing insurance to protect existing socio-economic developments, and more about how to adapt the current development and investment approaches to address underlying risk drivers and to strengthen the resilience of communities, infrastructure and facilities. Such an approach would further help to strengthen resilience and support a sustainable recovery by embracing build back better principles. Recovery in itself is the most complex disaster management function and inextricably linked to response efforts.



Although Covid-19 is a national epidemic, the Covid-19 risk is configured locally and must be managed locally. There is no one size fit all solution. Explicitly, this means that there are different vulnerabilities, different unmet needs and priorities and different capacities and sources of resilience. The initial exit strategy from the first UK lockdown should have been premised on rapid enhancement of these local risk governance capabilities that would have aimed to strengthen community resilience to reduce risk to further outbreaks. Doing so would have laid the foundation for an early and sustainable recovery, together with a flattening of the economic recession curve.

Local ownership and community engagement is widely recognised to be a significant issue in embedding and enhancing genuine emergency response capabilities. This is not merely a matter of 'handing off' those responsibilities to local authorities or similarly devolved agencies, but rather ensuring that local frameworks and capabilities are sufficiently funded and supported so as to allow them to be able to respond in an appropriate and effective manner when necessary. This does not imply that each agency or jurisdiction should be isolated, and there are critical issues in ensuring that they are also integrated into an overarching national crisis management and emergency response framework. One that is empowering and enabling rather than directive and restrictive.

Local actors and affected people are not only primary risk bearers, but appreciate local risk dynamics which is why they should be at the forefront of understanding trade-offs between public health impacts and socioeconomic impacts. To unlock and mobilise these local capacities and sources of resilience, collaboration and partnerships are a pre-requisite. This is wellillustrated in Japan's societal resilience approach. At the core if the approach is local volunteerism that is considered a fundamental resilience strategy and a property of resilient communities. An enabling environment for volunteerism strengthens disaster resilient communities. Effective collaboration with local volunteers can transform volunteering from a coping mechanism to a strategic resource for community resilience. This is why the manner in which external actors engage with local people matter. It is also particularly significant for vulnerable and marginalised high-risk groups.

Resilient systems are responsive and inclusive systems. In public administration this requires good governance principles of participation, transparency and accountability. It also includes using experts at national, regional and local levels to manage and run emergency planning, crisis management, and resilience. Politicians should only facilitate such work. Being aware of this, FEMA in the United States has changed their doctrine from being responsible for crisis response management to being responsible for supporting local communities who are engaged in crisis response management. Any effort to strengthen societal resilience requires local authorities and communities to be empowered to manage and reduce disaster risk by having access to necessary information, resources and authority to implement anticipatory actions. This requires a drive towards decentralisation of government authority and responsibilities and towards coordination within and between regions. Decentralisation can empower local levels with a sense of ownership, create a more inclusive atmosphere and foster greater community participation. However, effective decentralisation of disaster risk management requires robust and sustained linkages between national and local levels that transcend party political divides.

As well as specific protocols and procedures, there is much to be learned in terms of overall culture, leadership and governance. That is true of countries which are much less advanced than the UK but have had experiences of responding and adapting to crisis events, such as West Africa to Ebola. Those countries are often much more responsive and adaptive, using communitybased capabilities rather than centralised agencies. Another example is the Swiss model where federal plans are organised and controlled at Canton level and every citizen has a duty to support the resilience effort.





# **Lessons Learned**

As laid out previously, a resilient system is an adaptive, learning system and a crisis offers the opportunity to rethink existing approaches to risk and resilience. Learning is a fundamental resilience principle and essential to adapt and transform. It is important to note that it is almost certain that any lessons identified in any post-event review will reach conclusions that will exactly mirror conclusions reached in similar post-crisis event reviews both in the UK and across the world. There will be lessons learned in terms of leadership, multi-stakeholder integration, and community engagement.

For example, the section on 'Implications for the Machinery of Government' that was included as part of the House of Commons Public Administration and Constitutional Affairs Committee report from March 2017 into issues surrounding the Chilcot Inquiry into the Iraqi War could undoubtedly be cut and pasted into a post-Covid-19 review, with equal validity. The lessons that need to be learned have been clearly and repeatedly identified in previous reviews. At the heart of lessons learned is always the development of an overarching strategic vision and a framework that can support on-going response and recovery programmes in the most effective way. This includes communication both internally within government frameworks and externally in terms of public messaging. It is not another review from emergencies such as Hurricane Katrina, Fukushima, or Grenfell Towers that will have impact, but the commitment to implementing those decision in a meaningful and sustainable way, based on a commitment to creating the best possible national, regional and local crisis response and management frameworks and capabilities that will be effective in whatever future crisis events the UK might face.

Learning needs humility to learn from those countries that, for example, have managed the current pandemic outbreak better than the UK. Part of any exit strategy should be to leave behind better preparedness, authorities and communities. The UK response so far has failed to achieve that. It had the highest excess mortality levels and the deepest recession curve at the beginning of 2020, allthewhile incurring extremely high levels of public expenditure. This can cause a reduced competitive advantage in comparison to the UK's peer nations.

Every organisation should have a Lessons Team that captures these lessons and then ensure that they are learned as an ongoing response to any event. This process should be conducted as a continuous business activity working directly up to senior leadership. All organisations involved in the event would then be able to come together in order to share lessons and produce collective best practices. Such action would enable better coordination between all departments or organisations as well as improve internal and external communication. There is already a wealth of international good practice and expertise, both within and outside of the UK, that the government could tap into. Science, technology and data analytics innovations can inform and empower at-risk people and local actors to monitor, understand and act early upstream of the disaster cycle.

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